

What is claimed is:

1 Claim 1. In an SMP computer system having an  
2 source-synchronous pipelined, self-calibrating interface,  
3 the method of recalibrating the interface, comprising the  
4 steps of:  
5 a) halting operations of said SMP computer system having an  
6 source-synchronous pipelined, self-calibrating interface to  
7 idle the interface,  
8 b) fencing the interface,  
9 c) recalibrating the interface using clock readjustment,  
10 d) unfencing the interface, and  
11 e) commencing operations to allow interface use again.

1 Claim 2. The method according to claim 1, wherein said step  
2 of halting operations is done with a system quiesce  
3 operation.

1 Claim 3. The method according to claim 1, wherein said step  
2 of calibrating the interface is accomplished by sampling a  
3 known data pattern.

1 Claim 4. The method according to claim 1, wherein said step  
2 of calibrating the interface is accomplished by  
3 recalculating the frequency and applying the appropriate  
4 delay adjustment to the clock.

1 Claim 5. In an SMP computer system having an  
2 source-synchronous interface, the method for re-calibration  
3 of the interface at periodic intervals comprising the steps  
4 of:  
5 a. putting the system of the interface into a wait state,  
6 b. performing a fast initialization process for calibration,  
7 c. taking the system of the interface out of said wait  
8 state.

1 Claim 6. The method according to claim 5 wherein wherein a  
2 step of data deskew has been performed as part of the  
3 original system interface initialization, and during  
4 recalibration of only a single clock centering step for the  
5 interface is performed during said fast initialization  
6 process for calibration without deskewing data during said  
7 fast initialization step performed for re-calibration.

1 Claim 7. The method according to claim 6 wherein said wait  
2 state keeps the interface from being used for processing  
3 steps other than re-calibration and sending a calibration  
4 pattern and allowing claibration logic to re-center the  
5 clock applicable to the interface to compensate for new  
6 environmental conditions and circuit changes.

1 Claim 8. The method according to claim 7 wherein the  
2 recalibration of the interface is triggered periodically and  
3 in a mannter that circuit or environmental characteristics  
4 over time do not adversely affect the operation of the  
5 interface.

1 Claim 9. The method according to claim 7 wherein the  
2 re-calibration is based on a trigger event which triggers  
3 the steps for re-calibration of the interface

1 Claim 10. The method according to claim 1 whrein a quiesce  
2 of the system of the interface if performed prior to  
3 performing a fast initialization process for calibration,  
4 and during calibration, the step of calibrating the  
5 interface recalculates the frequency of the clock for the  
6 interface and applies an appropriate delay adjustment to the  
7 clock for the interface, after which the system for the

8 interface is unquiesced before commencing operations to  
9 allow interface use again.

1 Claim 11. The method according to claim 10 wherein the  
2 recalibration stem includes sending a pattern across the  
3 interface and adjusting the clock through re-centering  
4 without data de-skewing but with shifting to the clock to  
5 re-center the interface data capturing window for the 'eye'  
6 of the data capturing window.

1 Claim 12. The method according to claim 10 wherein the  
2 recalibration stem includes re-calculating the clock  
3 frequency of the interface against the current hardware and  
4 re-applying the clock frequency calculation to the clock  
5 delay to re-center the clock when the machine is being  
6 cycled down to failure and the major change needing  
7 re-calibration is cycle time.

1 Claim 13. The method of claim 5 wherein a state machine  
2 controls calibration, and said state machine allows  
3 a. putting the system of the interface into a wait state and  
4 for quiescing the data over the interface when the state  
5 machine enters a re-calibration state, whereupon,  
6 b. said a fast initialization process for calibration is  
7 performed, and then  
8 c. a change of said state machine changes the system of the  
9 interface back out of said wait state; and  
10 d. Allows data to transfer across the interface again.